CLAIMS

1. A signal processing apparatus for processing color signals and outputting a luminance signal and color difference signals, comprising:

a primary color converting unit for converting first color signals having primary color points in a wider color range than primary color points according to a predetermined standard by which color difference signals having a first numerical range are assigned to an integral value in a first integral range which is smaller than an integral range which can be expressed by a plurality of bits, into second color signals based on primary colors according to said predetermined standard;

a characteristics converting unit for converting said second color signals into third color signals according to photoelectric transducer characteristics defined in a numerical range which is greater than a numerical range of color signals corresponding to a luminance signal and color difference signals according to said predetermined standard;

a color signal converting unit for converting said third color signals into a luminance signal and color difference signals; and

a correcting unit for correcting the luminance

signal generated by said color signal converting unit into a luminance signal according to said predetermined standard, and correcting the color difference signals generated by said color signal converting unit into color difference signals in a second numerical range containing said first numerical range, said color difference signals being assigned to an integral value in the second numerical range which can be expressed by said plurality of bits.

2. The signal processing apparatus according to claim 1, wherein said photoelectric transducer characteristics are in point symmetry with respect to an origin.

3. The signal processing apparatus according to claim 1, wherein all of said primary color converting unit, said characteristics converting unit, and said color signal converting unit comprise a single look up table.

4. A signal processing method performed by a signal processing apparatus for processing color signals and outputting a luminance signal and color difference signals, comprising the steps of:

converting first color signals having primary color points in a wider color range than primary color points

according to a predetermined standard by which color difference signals having a first numerical range are assigned to an integral value in a first integral range which is smaller than an integral range which can be expressed by a plurality of bits, into second color signals based on primary colors according to said predetermined standard;

converting said second color signals into third color signals according to photoelectric transducer characteristics defined in a numerical range which is greater than a numerical range of color signals corresponding to a luminance signal and color difference signals according to said predetermined standard;

converting said third color signals into a luminance signal and color difference signals; and

correcting the luminance signal generated by said step of converting said third color signals, into a luminance signal according to said predetermined standard, and correcting the color difference signals generated by said step of converting said third color signals, into color difference signals in a second numerical range containing said first numerical range, said color difference signals being assigned to an integral value in the second numerical range which can be expressed by said

plurality of bits.

5. A program for enabling a computer to perform a signal processing process for processing color signals and outputting a luminance signal and color difference signals, said signal processing process comprising the steps of:

converting first color signals having primary color points in a wider color range than primary color points according to a predetermined standard by which color difference signals having a first numerical range are assigned to an integral value in a first integral range which is smaller than an integral range which can be expressed by a plurality of bits, into second color signals based on primary colors according to said predetermined standard;

converting said second color signals into third color signals according to photoelectric transducer characteristics defined in a numerical range which is greater than a numerical range of color signals corresponding to a luminance signal and color difference signals according to said predetermined standard;

converting said third color signals into a luminance signal and color difference signals; and

correcting the luminance signal generated by said

step of converting said third color signals, into a luminance signal according to said predetermined standard, and correcting the color difference signals generated by said step of converting said third color signals, into color difference signals in a second numerical range containing said first numerical range, said color difference signals being assigned to an integral value in the second numerical range which can be expressed by said plurality of bits.

6. A signal processing apparatus for processing a luminance signal and color difference signals and outputting color signals, wherein said luminance signal and said color difference signals comprise a luminance signal and color difference signals obtained by:

converting first color signals having primary color points in a wider color range than primary color points according to a predetermined standard by which color difference signals having a first numerical range are assigned to an integral value in a first integral range which is smaller than an integral range which can be expressed by a plurality of bits, into second color signals based on primary colors according to said predetermined standard;

converting said second color signals into third

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color signals according to photoelectric transducer characteristics defined in a numerical range which is greater than a numerical range of color signals corresponding to a luminance signal and color difference signals according to said predetermined standard; and

converting said third color signals into a luminance signal and color difference signals;

wherein said luminance signal comprises a luminance signal according to said predetermined standard and said color difference signals comprise color difference signals in a second numerical range containing said first numerical range, said color difference signals being assigned to an integral value in the second numerical range which can be expressed by said plurality of bits;

wherein said signal processing apparatus comprises:

a luminance and color difference signal converting unit for converting said luminance signal according to said predetermined standard and said color difference signals in said second numerical range into said third color signals;

a characteristic converting unit for converting said third color signals into said second color signals according to said photoelectric transducer characteristics;

a primary color converting unit for converting said second color signals into said first color signals; and

a correcting unit for correcting said first color signals into signals in a numerical range which can be displayed by a display mechanism for displaying an image.

7. The signal processing apparatus according to claim 6, wherein said photoelectric transducer characteristics are in point symmetry with respect to an origin.

8. The signal processing apparatus according to claim 6, wherein all of said luminance and color difference signal converting unit, said characteristics converting unit, and said primary color converting unit comprise a single look up table.

9. A signal processing method performed by a signal processing apparatus for processing a luminance signal and color difference signals and outputting color signals, wherein said luminance signal and said color difference signals comprise a luminance signal and color difference signals obtained by:

converting first color signals having primary color points in a wider color range than primary color points according to a predetermined standard by which color difference signals having a first numerical range are

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assigned to an integral value in a first integral range which is smaller than an integral range which can be expressed by a plurality of bits, into second color signals based on primary colors according to said predetermined standard;

converting said second color signals into third color signals according to photoelectric transducer characteristics defined in a numerical range which is greater than a numerical range of color signals corresponding to a luminance signal and color difference signals according to said predetermined standard; and

converting said third color signals into a luminance signal and color difference signals;

wherein said luminance signal comprises a luminance signal according to said predetermined standard and said color difference signals comprise color difference signals in a second numerical range containing said first numerical range, said color difference signals being assigned to an integral value in the second numerical range which can be expressed by said plurality of bits;

wherein said signal processing method comprises the steps of:

converting said luminance signal according to said predetermined standard and said color difference signals

in said second numerical range into said third color

signals;

converting said third color signals into said

second color signals according to said photoelectric

transducer characteristics;

converting said second color signals into said

first color signals; and

correcting said first color signals into signals in

a numerical range which can be displayed by a display

mechanism for displaying an image.

10. A program for enabling a computer to perform a

signal processing process for processing a luminance

signal and color difference signals and outputting color

signals, wherein said luminance signal and said color

difference signals comprise a luminance signal and color

difference signals obtained by:

converting first color signals having primary color

points in a wider color range than primary color points

according to a predetermined standard by which color

difference signals having a first numerical range are

assigned to an integral value in a first integral range

which is smaller than an integral range which can be

expressed by a plurality of bits, into second color

signals based on primary colors according to said

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predetermined standard;

converting said second color signals into third color signals according to photoelectric transducer characteristics defined in a numerical range which is greater than a numerical range of color signals corresponding to a luminance signal and color difference signals according to said predetermined standard; and

converting said third color signals into a luminance signal and color difference signals;

wherein said luminance signal comprises a luminance signal according to said predetermined standard and said color difference signals comprise color difference signals in a second numerical range containing said first numerical range, said color difference signals being assigned to an integral value in the second numerical range which can be expressed by said plurality of bits;

wherein said signal processing process comprises the steps of:

converting said luminance signal according to said predetermined standard and said color difference signals in said second numerical range into said third color signals;

converting said third color signals into said second color signals according to said photoelectric

transducer characteristics;

converting said second color signals into said first color signals; and

correcting said first color signals into signals in a numerical range which can be displayed by a display mechanism for displaying an image.